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ABSTRACT

This material describes curriculum specifications for grade 3 mathematics in Alberta. Emphases are: (1) subject matter (60%); (2) problem-solving skills (20%); (3) psychomotor skills (10%); and (4) attitudes (10%). Priorities within each category are identified and suggested problem solving strategies are listed. (YP)

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GRADE 3 MATHEMATICS CURRICULUM SPECIFICATIONS

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GRADE 3 MATHEMATICS CURRICULUM SPECIFICATIONS

The Mathematics Curriculum Specifications for Grade 3 were prepared in July, 1984 by a committee under the direction of the Curriculum Branch. Alberta Education acknowledges with appreciation the contributions of the following members:

A. Anderson, County of Vermilion River
G. Popowich, Alberta Education
B. Bober, Edmonton Catholic School Board
M. Bye, University of Calgary

The following considerations determined the final Curriculum Specifications for Grade 3:

1. The specifications were based on he *Program of Studies for Elementary Schools*, September, 1982.

2. The content emphasis to be placed on each of the four components that make up the elementary mathematics program is reflected in the curriculum summary on pages 3 and 4.

3. The problem-solving and psychomotor skills components are viewed as integrative within the subject matter dimension and should not be treated as separate entities. The relative emphasis of problem-solving and psychomotor skills with each of the five subject matter (concept) strands is also reflected on pages 3 and 4.

4. The attitude component is viewed as being pervasive throughout the total program.

5. The relative emphasis to be placed on each of the subject matter statements within each of the five concept strands is outlined on pages 5 and 6.

6. Three taxonomic classifications for subject matter were suggested and defined by the committee:

   Knowledge

   - Testing for knowledge includes exercises involving immediate recall and routine manipulation. This level represents primarily the outcomes which require of the student no decision making or complex memory.

Comprehension

- Knowledge of concepts. A concept is an abstraction and as such requires complex decision making.

- Translations. Comprehension involves translating from the concrete to pictorial to symbolic, or in reverse order.

Application

- Includes the ability to solve problems involving learned skills and concepts.

- Involves the ability to recognize patterns and relationships.

CONTENT EMPHASES

	Per cent Emphases
SUBJECT MATTER	60
Numeration	20
Operations and Properties	20
Measurement	10
Geometry	5
Graphing	5
PROBLEM-SOLVING SKILLS	20
Numeration	4
Operations and Properties	4
Measurement	4
Geometry	2
Graphing	1
Developing a problem-solving model and strategies outside the context of a mathematical application	5

	Per cent Emphases
PSYCHOMOTOR SKILLS	10
Measurement	4
Geometry	5
Graphing	1
ATTITUDES	10

SUBJECT MATTER EMPHASES

	Per Cent Emphases
Numeration	20
- Orders and determines "betweenness" of whole numbers (0-1 000) and understands symbols >, <, and = to show relationships.	3
- Reads and writes numerals (0-9 999).	3
- Identifies multiples by counting by 2's, 5's, 10's, 25's, 100's (0-1 000).	3
- Identifies the number of 1 000's, 100's, 10's and 1's in a number.	4
- Writes numbers in expanded notation (0-1 000) and vice versa.	3
- Identifies, writes and compares proper fractions from concrete and pictorial representation (halves, thirds, quarters, fifths, and tenths).	2
- Reads and writes decimals from concrete and pictorial situations (tenths only).	2
Operations and Properties	20
- Identifies addition, subtraction, multiplication and division situations.	3
- Adds and subtracts two or three-digit numbers with and without regrouping.	4
- Symbolizes multiplication and division situations.	2
- Understands the commutative property of addition and of multiplication.	2
- Identifies related sentences for addition, subtraction, multiplication and division.	2
- Understands the unique effect of 0 and 1 in addition and multiplication.	2
- Demonstrates mastery of basic facts involving sums and minuends to 18 and products and dividends to 45.	3
- Multiplies whole numbers by 10 and 100.	2

	Per Cent Emphases
Measurement	10
- Tells and writes the time to the nearest hour, half hour, quarter hour and five-minute intervals.	2
- Orders months of the year.	1
- Reads the Celsius thermometer to one degree intervals and uses the symbol (°C).	1
- Counts collections of coins up to $1.00.	1
- Makes purchases and change up to $1.00.	1
- Extends estimation and measurement to include the use of the standard units, kilometre, and decimetre with symbols km and dm.	3
- Uses standard measuring instruments (metre stick, litre container, mass scale, calendar, Celsius thermometer).	1
Geometry	5
- Classifies and identifies three-dimensional objects and two-dimensional figures.	2
- Constructs simple three-dimensional objects.	1
- Constructs simple two-dimensional figures.	1
- Identifies symmetric figures and draws lines of symmetry on two-dimensional figures.	1
Graphing	5
- Identifies the axes.	1
- Collects data, and constructs pictographs and simple bar graphs.	1
- Interprets pictographs and simple bar graphs.	2
- Locates position of an object on a grid.	1

SUGGESTED PROBLEM-SOLVING STRATEGIES

1

Understanding the Problem

- Using manipulatives
- Interpreting pictures
- Looking for patterns
- Identifying key words
- Acting it out
- Drawing diagrams
- Restating the problem in your own words
- Asking relevant questions
- Identifying wanted, given, and needed information
- Identifying extraneous information
- Considering alternative interpretations

2

Developing a Plan

- Acting it out
- Using manipulatives
- Collecting and organizing information (charts, graphs)
- Applying patterns
- Choosing and applying the appropriate operation
- Writing and solving a number sentence
- Guessing and checking
- Identifying and applying relationships
- Making diagrams and models
- Using a simpler problem
- Using logic or reason
- Constructing flow charts

3

Carrying out the Plan

- Acting it out
- Using manipulatives
- Collecting and organizing information (charts, graphs)
- Applying patterns
- Choosing and applying the appropriate operation
- Writing and solving a number sentence
- Guessing and checking
- Identifying and applying relationships
- Making diagrams and models
- Using a simpler problem
- Using logic and reason
- Constructing flow charts

4

Looking Back

- Stating an answer to the problem
- Restating the problem with the answer
- Checking the answer
- Determining the reasonableness of the answer
- Explaining the answer
- Reviewing the solution process
- Considering the possibility of other answers
- Looking for alternative ways to solve the problem
- Making and solving similar problems
- Generalizing solutions